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A SMALL MIRACLE IN KENYA

by Fibi Munene

KENYA, IDRC -- Research in East Africa to develop an improved pigeon pea plant is paying off after more than a decade. Excited farmers in the dry regions of Machakos and Kitui in eastern Kenya are testing the new variety in their fields and calling it the "miracle" pigeon pea.

There is good reason for excitement. The humble pigeon pea can survive and produce a reasonable crop even when other crops such as maize and beans whither. In dry years it may be the only food crop available. And the peas contain as much as 22 percent protein.

Grown on some 115,000 hectares, the pigeon pea is the most important grain legume in Kenya's dry regions, and Kenya is the world's second largest pigeon pea producer. Although cotton-growing is becoming an increasingly important source of income in the semi-arid areas, pigeon peas remain the most important income earner for most farm families.

The first pigeon pea improvement programme in East Africa began in 1969 at Makerere University in Kampala, Uganda. Dr J.F. Moses Onim, now leader of the Kenyan research programme, worked on the Ugandan programme as a student. In 1976, the International Development Research Centre, which had supported the research at Makerere, provided a grant for the continuation of his work, this time at the University of Nairobi's Crop Science Department.

The first step to improving pigeon peas was to identify various agronomic factors limiting yields, and major pest and disease problems. A detailed study was also made

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of breeding problems that threatened the project's progress, and it was decided to change breeding methods, using pollination by insects to obtain genetic variability from which new varieties could be selected. This proved less costly and time-consuming. The project also aimed to produce plants that are more drought-resistant than the local varieties, by selecting seeds that developed longer roots capable of reaching moisture at deeper soil levels.

Previous attempts to introduce early-maturing, high-yielding pigeon peas to Kenya failed because most had smaller, darker seeds than the local, large, white varieties. By focusing the breeding programme on improving local varieties, the scientists produced new cultivars with the characteristics desired by the farmers.

Of the 400 varieties screened between 1976 and 1978, six were selected for initial testing in farmers' fields. In 1979, 12 farmers were given three kilos of seed and instructed to plant half their fields to the improved varieties, the other half to their usual ones, using traditional methods of cultivation.

The farmers' varieties yielded an average of 1361 kilos per hectare, while the improved varieties almost doubled that yield at 2637 kilos per hectare. Five varieties are now being tested by 312 farmers. It appears all will mature earlier than the local pigeon peas, which are normally planted in October and harvested in July.

Studies of the "miracle" pigeon pea show that, when planted in October, it matures in February. A second crop can be harvested in May if the plant is left to grow, or in July if the plant is severely cut back. Farmers can thus manipulate dates of harvest, and it seems possible that a third crop could be obtained.

The plant grows only a metre high, while farmers' types grow up to three times that height. It will thus be easier to harvest. And as it bears its pods near the top, mechanized harvesting should be possible for farmers who wish to engage in large-scale pigeon pea farming, especially as a fallow crop in wheat-growing areas.

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According to Dr Onim, testing the cultivars on farmers' lands has helped narrow the gap between the researchers' and the farmers' yields. Scientists are also learning from the farmers' time-proven methods of cultivation. Dr Onim cautions, however, that it is important to be sure about the new pigeon pea varieties before they are widely released, and that even the "miracle" cultivar has to undergo further research and testing to overcome problems of susceptibility to certain diseases.

Another benefit of the programme is that it has drawn attention to a staple food crop usually neglected in agricultural development programmes in favour of export crops such as coffee, tea, sisal, and cotton. The success of the pigeon pea project to date has convinced the Kenyan government and some development agencies that a greater investment in agricultural research aimed at intensifying land use in small-holdings, and on production techniques for areas of low rainfall, is essential if the goal of increasing food supplies is to be reached.

Recently the United Nations Development Programme (UNDP) added pigeon peas to the grain legumes included in its improvement programme in Kenya. And a team of scientists from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has visited Kenya with a view to setting up an outreach station in the country.

The results of the project have also been presented at several international conferences and workshops, where word of the "miracle" pigeon pea aroused considerable interest. The research in Kenya could eventually have wide application for other countries of the semi-arid tropics where pigeon peas are an important staple food.

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